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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,238	11/06/2003	Bradley J. Howard	97-0008.02	7948

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EXAMINER

LEE, SIN J

ART UNIT PAPER NUMBER

1752

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/702,238

Applicant(s)

HOWARD, BRADLEY J.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 55-61 and 76-87 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55-57, 59-61, 76-78 and 82-87 is/are rejected.
- 7) ☒ Claim(s) 58 and 79-81 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 110603.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election with traverse of Group I in the reply filed on September 30, 2004 is acknowledged. In view of applicant's argument, the Examiner regrouped Group I invention to include claims 55-61 and 76-87, and all of those claims were examined in this Office action.
2. Applicant canceled claims 62-70, 71-75, 88-96, and 97-100.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 55-57, 59-61, 76-78, and 82-87 are rejected under 35 U.S.C. 102(e) as being anticipated by Jiang et al (US 6,515,355 B1).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In Fig.9A-9C, Jiang illustrates a stackable integrated circuit device (see col.4, lines 62-67, col.5, lines 24-49). Jiang forms a patterned passivation layer (56) by depositing a layer of *PPMS* (plasma polymerized methylsilane) and patternwise exposing (*in air or other oxygen environment* –see col.3, lines 62-64) the *PPMS* to deep UV light (the exposed portions being confined to that areas in which passivation is desired). The portions of the *PPMS* over which passivation is not desired (e.g., the solder bass pads 52) are not exposed to the UV light, and the oxide-like *PPMSO* (a crosslinked *siloxane* network) passivation layer is thus formed only where desired, leaving *PPMS* over the solder ball pads 52. The unexposed portions of the *PPMS* layer are thereafter developed by exposure to *dry chlorine plasma treatment*. Exposure to this chlorine plasma removes the unexposed *PPMS*, while leaving the exposed *PPMSO* passivation layer 56 unharmed. Thus, the solder ball pads 52 remain exposed and available for contact with solder balls 14' from an overlying packaged substrate 50.

Jiang's *PPMS* teaches present photodefinable layer and his *PPMSO* teaches present insulative material. Since only the unexposed portion of the *PPMS* layer (i.e., the portion in which the solder ball pads is exposed after the dry chlorine plasma treatment) is available for contact with solder balls (to form *electrical connection*) while the exposed portion of the *PPMS* layer (the oxide-like *PPMSO*) is not available for such contact, it is the Examiner's position that the exposed portion of the *PPMS* layer of Jiang is being used as a patterned mask for further processing steps as presently recited. Also, Jiang's passivation layer (the *PPMSO* layer) is being left within the semiconductor device. Thus, the prior art teaches present inventions of claims 55-57, 59-61, 76-78, and 82-87.

5. Claims 58 and 79-81 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Jiang does not teach or suggest present step of converting PPMSO layer to oxide through exposure to an oxygen plasma (and consolidating the oxide layer with an anneal).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. J. Lee

S. Lee
December 12, 2004

Sin J. Lee
Sin J. Lee
Patent Examiner
Technology Center 1700